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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/644,255 | 08/20/2003 | Mark Cullen | CULLN-001B | 6075 |

7590 07/26/2005

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| EXAMINER | |
|---|---|
| NGUYEN, TAM M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1764 | |

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/644,255 | CULLEN, MARK | |
| | Examiner | Art Unit | |
| | Tam M. Nguyen | 1764 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/28/04, 8/12/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.



15

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/429,369. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization and hydrodesulfurization. The copending claimed set does not specifically claims that sulfones are generated in the oxidation step. However, it is known that sulfur compounds are converted to both sulfones and sulfoxides in an oxidation process. Even if sulfoxides are intended products, there always small amount of sulfoxides would be produced in the process as a by product. Therefore, the copending claimed process would generate sulfones in the oxidation step as claimed in the present claimed process. (Please see abstract of Ho et al. (5,958,224) as an outside record)

Claims 1 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 9 of copending

Application No. 10/411,796. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization and hydrodesulfurization. The copending claimed set does not specifically claims that sulfones are generated in the oxidation step. However, it is known that sulfur compounds are converted to both sulfones and sulfoxides in an oxidation process.

Claims 1 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35 and 49 of copending Application No. 10/433,666. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims claim a process for removing sulfur compounds from a liquid fossil fuel by involving steps of oxidization and hydrodesulfurization. The copending claimed set does not specifically claims that the organic sulfur is converted to hydrogen sulfide by hydrodesulfurization. However, it is inherent that an organic sulfur is converted to hydrogen sulfide in a hydrodesulfurization process.

Claims 1, 2, 4, and 7-11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35-48 of copending Application No. 11/096,691. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims teach a process for reducing sulfur compound by using sonic energy and hydrodesulfurization. The present claimed set does not specifically claim that the frequency ranges. However, one of skill in the art would use any frequency in the present claimed process including the frequency which is utilized by the copending claimed process.

Claims 1, 2, 4, and 7-11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 35-48 of copending Application No. 11/096,779. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims teach a process for reducing sulfur compound by using sonic energy and hydrodesulfurization. The present claimed set does not specifically claim that the frequency ranges. However, one of skill in the art would use any frequency in the present claimed process including the frequency which is utilized by the copending claimed process.

These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "said emulsion" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### *Specification*

The specification is objected to because in line 2 of paragraph 001, Applicant claimed that the present application is a continuation-in-part of pending United States Patent Application Serial Number 10/431,661. However, it appears that the Application Serial Number should be 10/431,666. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 12-14, and 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sorgenti (3,816,301).

Sorgenti discloses a process for reducing sulfur content of sulfur containing hydrocarbon (e.g., a fuel derived from petroleum) by contacting the hydrocarbon with an oxidizing agent (e.g., hydroperoxide or peracids) to oxidize sulfur compounds in the hydrocarbon. The hydrocarbon is then subjected to hydrodesulfurization (conventional hydrotreating) to produce a hydrocarbon having a reduced sulfur content. Sorgenti also discloses that the oxidized sulfur compounds are decomposed to produce hydrogen sulfide ($H_2S$) which is released from the hydrocarbon product. The oxidation step is operated at a temperature of from 50-300° C and at a pressure of from 1 to 100 Atm (14.7-147 psia) and is operated in the presence of a catalyst comprising molybdenum. (See abstract; col. 2, lines 26-44 and 58, col. 5, lines 13-19; col. 7, lines 6-10, 19-20, and 38-66)

It is noted that Sorgenti does not specifically disclose that nitrogen-bearing compounds are converted into converted into oxidized nitrogen-bearing compounds. However, the feedstock of Sorgenti contains nitrogen compounds. Therefore, it would be expected that oxidized nitrogen-containing compounds would be converted to oxidized nitrogen-containing compounds as claimed because of the similarities between the claimed process of the process of Sorgenti in terms of feedstock and the oxidation step.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorgenti (3,816,301)

Sorgenti does not specifically disclose the types of the crude oil as claimed in claims 6, 8-10. However, Sorgenti discloses that many different types of feedstock can be used in the process. (See col. 7, lines 39-60)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Sorgenti by using the claimed feedstock because one of skill in the art would any type of feedstock including the claimed feedstock and it would be expected that the claimed feedstock would effectively treated in the process of Sorgenti because of the similarities between the claimed feedstock and the Sorgenti feedstock.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorgenti (3,816,301) in view of Funakoshi et al. (5,753,102)

Sorgenti does not specifically disclose the use of a centrifugation.

Funakoshi disclose a centrifugation. (See col. 5, lines 24-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Sorgenti by using a centrifugation as taught by Funakoshi because Sorgenti teaches that any conventional separator can be used (see col. 9, lines 51-55) and an centrifugation is an effective liquid-liquid separator.

Claims 4, 7 and 11, 15, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorgenti (3,816,301) in view of Gunnerman (6,500,219)

Sorgenti does not disclose that an ultrasound is employed in the oxidation step, does not disclose that the catalyst comprises nickel.

Gunnerman discloses a process for removing sulfur compounds from a hydrocarbon feed (e.g., a fraction boiling within the diesel range) by contacting the hydrocarbon feed with an oxidizing agent and catalyst comprising nickel. The oxidation process is also operated in the presence of ultrasound. The residence time of the oxidation step is from about 0.3 to about 30 minutes. (See abstract; col. 5, lines 23-30; col. 6, lines 29-38)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Sorgenti by applying ultrasound in the oxidation step because Gunnerman discloses that the separation process is enhanced when applying ultrasound during the oxidation reaction. (See Gunnerman; col. 2, lines 26-44)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Sorgenti by using catalyst comprising nickel as taught by Gunnerman because such catalyst is effective in an oxidation process.

Regarding claim 7, please see the rejection of claims 6 and 8-10 above.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tam M. Nguyen
Examiner
Art Unit 1764

TN 7/20/05

Tam